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Utilization of Toddler Development Stimulation Videos in Improving Developmental Milestones

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Abstract: *Children under five years old are the golden age for a child to acquire excellent skills such as perception, interaction, speaking, etc., and therefore, developmental screening at this age to identify developmental problems in children early and provide treatment. Families, especially caregivers, provide the care needed by children to develop in the early years, so they need support to provide stimulation. The problem of gross motor development at an early age is the greatest and as the age increases, the problem of further development such as fine motor skills, walking. The purpose of this study was to determine the effect of educational video stimulation of toddler development on increasing developmental milestones. This research method uses a quasi-experimental design, one group pre-test post-test. This research was conducted at the Posyandu Balita Sahabat Masyarakat, Kusumadilagan, RT 04 / RW 12, Joyosuran, Pasarkliwon, Surakarta on October 23 - November 9, 2024. Respondents in this study were mother and child pairs. The population of respondents was 30 respondents and a sample of 20 respondents, with a sampling technique using purposive sampling. The research instrument is a pre-screening development questionnaire (KPSP). Data analysis uses the Wilcoxon parametric test. The results of the study obtained a significance value of the pre-test and post-test values of 0.002, so it can be concluded that there is an effect of providing toddler development stimulation video education on increasing development milestones.*

Keywords: *development, education, milestone, toddler, video*

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INTRODUCTION

Child development includes increasing structure, function, and increasingly complex abilities. These aspects include sensory abilities (such as hearing, seeing, touching, feeling, and smelling), motor skills (gross movements, fine movements, and complex movements), and communication and interaction abilities (such as smiling, crying, and speaking). In addition, child development also includes cognitive aspects (the ability to recognize, compare, remember, solve problems, and intelligence), social skills and independence, creativity, and moral and spiritual development that includes customary, cultural, and religious values.(Kemenkes, 2022).

Early childhood development is an important foundation for the health and well-being of individuals in adulthood, as well as a crucial element in achieving the Sustainable Development Goals (SDGs). However, global data shows that around 43% or 250 million children under five worldwide

are at risk of not reaching their maximum development potential due to the adverse effects of stunting and extreme poverty. This condition not only hinders the abilities of individual children, but also has an impact on the overall decline in the quality of human resources. As a result, delays in early childhood development have the potential to affect the productivity of future generations and pose serious challenges to national development efforts. Therefore, effective interventions, such as improving nutrition, reducing poverty, and supporting early stimulation and quality care, are strategic steps to ensure that children can grow and develop optimally (Richter, 2016).

In achieving this, strong support from the health sector is also needed. Especially in the first two years of life, which is a critical period with very rapid motor, language and cognitive development (Farrell et al., 2025). This period is marked by rapid synapse development and an increase in gray and white matter in the brain. Therefore, maternal health promotion and developmental support play a central role in supporting a child's brain development (Gao, 2018). When developmental deficits are identified early, prompt health interventions and developmental support services are key to ensuring children can reach their full potential (WHO, 2022).

In addition, the age of less than five years is a golden age for a child to acquire important skills such as perception, interaction, and speaking skills. Therefore, developmental screening at this age is very important to identify developmental problems early and provide appropriate intervention or treatment to support optimal child growth and development. Optimal development in early childhood is reflected in the achievement of physical, cognitive, motor, and socio-emotional development stages that are appropriate for age, as well as the development of multiple intelligences according to their genetic potential (Clark et al., 2020).

This can be realized through positive parenting, which involves loving interactions, mutual respect, fulfillment of children's rights, and creating a warm relationship between children and parents. In addition, positive parenting also includes providing stimulation that supports children's growth and development from an early age to ensure that every aspect of children's development can be achieved optimally (Clark et al., 2020)

Research result Toghyani et al., (2015) shows that the problem of gross motor development at an early age is the biggest and as age increases, the problem of further development such as fine motor skills, walking. Research conducted by Herawati (2021) explains that developmental stimulation in children aged 6-12 months can increase after being given education related to stimulation via video compared to books (handbooks).

The use of video stimulation has proven to be very effective in improving child development. This media is able to channel knowledge to the brain more optimally because it provides a more realistic picture, while increasing memory retention thanks to its attractive and memorable nature compared to other media. In addition, easy access to smartphones and the high number of users provide a great opportunity to apply education through video media widely and effectively(Lestari et al., 2018). Therefore, this study aims to improve Toddler Development in Improving Developmental Milestones through the use of Stimulation Videos.

This research conducted at Posyandu Balita Sahabat Masyarakat, Kusumadilagan, RT 04/RW 12, Joyosuran, Pasarkliwon, Surakarta. The problem in the toddler posyandu is that most mothers said that they never knew how to provide developmental stimulation to their children, so far they have let it be according to their age. Mothers assume that children will be able to do various developments according to their age. This study aims to determine the effect of educational video stimulation of toddler development on increasing developmental milestones. This study is expected to be a guide to provide stimulation of the effect of educational video stimulation of toddler development on increasing developmental milestones. A preliminary study was conducted by observation and interview with posyandu cadres and mothers who have toddler-aged children to find out the problems found in the partners. The problem in the toddler posyandu is that most mothers said that they never knew how to provide developmental stimulation to their children, so far they have let their children be according to their age. The results of the observation and interview showed that there were still some children's developments that were not according to their age and mothers' knowledge about child development stimulation was still low.

METHOD

This study uses *a quasi-experimental design, one group pre-test post-test* which aims to determine the effect of educational video stimulation of toddler development on increasing developmental milestones with *ethical clearance* 490/LPPM/ITS.PKU/XI/2024. This study was conducted at the Sahabat Masyarakat Posyandu located in Kusumadilagan, RT 04/RW 12, Joyosuran, Pasarkliwon, Surakarta on October 23 - November 9, 2024. The respondents in this study were mother and child pairs. The population of respondents was 30 respondents and a sample of 20 respondents, with a sampling technique using *purposive sampling*. Furthermore, the creation of a developmental stimulation video, at this stage the creation of the video is divided into 3 videos that are adjusted to the age of the child consisting of a stimulation video for 1 year old children, a stimulation video for 2 year old children, and a stimulation video for 3 year old children. This video is designed so that mothers can easily understand and follow each stage of stimulation. Thus, mothers can ensure that their children receive the right stimulation and according to their developmental stage. This research was conducted by researchers and assisted by 2 research assistants.

In the implementation and data collection stage, the first stage is to collect mothers who have toddler-aged children at the Posyandu Balita Sahabat Masyarakat. The second stage is to determine the inclusion criteria, namely children aged 0-72 months, living in the same house with their parents for approximately 1 year, not having emotional mental health problems and willing to be respondents, while the exclusion criteria are children who attend the posyandu and do not have chronic diseases. The third stage is to provide informed consent forms and screen for emotional mental health problems with the Behavioral and Emotional Problems Questionnaire (KMPE). The fourth stage is to distribute pre-test questionnaires using the KPSP questionnaire. The KPSP questionnaire is a tool designed to detect the possibility of developmental disorders in children aged 0-6 years. This questionnaire consists of several questions covering aspects of gross motor development, fine motor skills, language, and social emotional. For example, the child's ability to crawl, grasp small objects, respond to sounds, or interact with others. The fifth stage is to provide developmental stimulation education through videos, which are measured within 2 weeks. Mothers are ensured to watch videos and train their children's stimulation according to their age every day for 30 minutes for 2 weeks. The sixth stage is the provision of a post-test questionnaire with a KPSP questionnaire to measure the effectiveness of toddler development stimulation videos in increasing development milestones after 2 weeks. Data analysis was carried out univariately and bivariately, namely using the SPSS program with the *Wilcoxon* parametric test.

RESULTS

Research Location Overview

Posyandu, or Integrated Service Post, is one of the important health programs in Indonesia that focuses on health services for mothers and children, especially toddlers. The location of the research was at Posyandu Balita Sahabat Masyarakat, Kusumadilagan, RT 04/RW 12, Joyosuran, Pasarkliwon, Surakarta. Usually parents get information about child growth and development through posyandu which is usually from the Gajahan Health Center providing education about child growth and development. And from the cadres also convey child growth and development according to their age. The majority of children there are some children who are not in accordance with their growth and development due to minimal attention from their parents. Many parents work so that many children are left with neighbors or household assistants, therefore parents do not supervise their children's growth and development properly.

Characteristics of Research Respondents

Respondents in this study consisted of 20 pairs of mothers and children. The characteristics of respondents in this study are shown in Table 1.

Table 1. Characteristics of research respondents (n=20)

Characteristics	Frequency (f)	Percentage (%)
Child age		
Infant (0-12 months)	4	20
Toddler (13-36 months)	4	20
Children (37-60 months)	12	60
Gender of the child		
Man	10	50
Woman	10	50
Mother's age		
20-35 years	14	70
36-45 years	6	30
Mother's job		
Work	8	40
Doesn't work	12	60

Based on Table 1, the characteristics of children show that the majority of children are in the age range of 37-60 months as many as 12 respondents (60%) with balanced child gender, each of which is 10 respondents (50%) for boys and girls. Meanwhile, for the characteristics of the mother's age, most mothers are in the age range of 20-35 years, namely 14 respondents (70%), and the majority are not working, namely 12 respondents (60%).

Table 2. Distribution of Differences in Developmental Milestones Before and After Stimulation Videos were Given

Characteristics	Before Stimulation is Given		AfterGiven Stimulation	
	Frequency (f)	Presentation (%)	Frequency (f)	Percentage (%)
In accordance	9	45	17	85
Doubtful	8	40	3	15
Possible deviations	3	15	0	0

Based on table 2, it shows that the majority of children before being given stimulation had appropriate development as many as 9 respondents (45%). After being given stimulation, the majority of children showed appropriate development as many as 17 respondents (85%). This shows that there was a significant increase in the appropriate development category after stimulation.

Utilization of Toddler Development Stimulation Videos in Improving Developmental Milestones

Stimulation videos as a medium to provide education to parents related to increasing developmental milestones have been given to parents. The results obtained are in table 3.

Table 3. Statistical Test Results of the Effect of Toddler Development Stimulation Videos on Improving Developmental Milestones (n=20)

	Mean	p
Pre-test	7.85	0.002
Post test	9.25	

Table 3. The results of the analysis show that the average pre-test score was 7.85, while the average post-test score increased to 9.25. The statistical test showed a p-value of 0.002, which means

there is a significant difference between the pre-test and post-test scores. This shows that the intervention given is effective in improving children's development milestones.

DISCUSSION

The majority of children in this study were aged 37-60 months. At this age, children show higher levels of obedience and more intense interactions with their parents. This provides an opportunity for parents to better understand and direct the development of their child's behavior in more depth. More intense interactions allow parents to be more responsive to their child's emotional and social needs, as well as to identify changes or developments in their child's behavior over time (Kim & Kochanska, 2020).

In addition, age is a factor that determines the readiness of providing motor stimulation to children. Children of this age need to move a lot to develop their gross motor skills. The development of a child's gross motor skills at the age of 3 years is doing simple movements such as jumping, jumping, running and this shows pride and achievement. While at the age of 4 years, children continue to do the same movements, but are already brave enough to take risks such as children can go up stairs with one leg and then go down in the same way and pay attention to the time at each step. Furthermore, at the age of 5 years children are more confident by trying to compete with their peers or parents (Nurasyiah & Atikah, 2023). Many studies have found that boys and girls perform equally on a variety of developmental tasks, although anatomical differences based on sex can affect a child's growth and development (Li et al., 2016). Other research conducted by Lawrence et al., (2015) shows that women are better at recognizing facial expressions than men, who tend to have difficulty distinguishing emotions. This may be due to differences in the psychological processes used by men and women.

Boys are typically seen as having stronger negative emotions than girls, such as anger and fear. In contrast, emotions that are dominant in girls are often stigmatized as calming emotions, such as various forms of joy and affection. The most striking differences in these gender role stereotypes are seen in the characteristics attributed to men. For example, the typical feminine personality is characterized by dependence, passivity, and submissiveness, while the typical masculine personality is dominant, aggressive, and active (Aditya et al., 2023). Women tend to have a more empathetic thinking style, which leads them to focus more on understanding other people's feelings, predicting their behavior, and providing appropriate emotional responses. In contrast, men are more likely to have a systematic thinking style, with a tendency to analyze and understand how systems or patterns work through the rules that govern them. Research shows that women generally score higher on tests that measure social and emotional abilities, such as recognizing emotions, social sensitivity, empathy, and emotional intelligence (Adenzato et al., 2017).

The results of this study indicate a significant difference in the stages of child development before and after stimulation by parents. This finding confirms the importance of the role of parents in supporting optimal child development, because child development is one of the main determinants of the quality of human resources in the future. In this effort, parents play a key role as companions and facilitators of development, by ensuring that children receive attention, support, and stimulation that is appropriate to their stage of growth and development. The application of positive parenting patterns, such as providing affection, encouraging exploration, and providing a safe and supportive environment, is a responsibility that cannot be ignored by parents. Through the right parenting patterns, parents not only help children achieve their best potential, but also contribute to the creation of a quality and competitive generation in the future (Nursanti et al., 2025).

Positive parenting behaviors in early childhood play a crucial role in promoting language and cognitive development, including through activities such as reading, singing, and playing with children. Conversely, negative parenting can have a negative impact on child development such as physical punishment or scolding children, associated with the risk of developmental delays in early childhood (Yue et al., 2024). Positive parenting can be realized through quality social interactions in the family, such as interactions based on affection, mutual respect, fulfillment of children's rights, and creating warm

relationships between children and parents. In addition, positive parenting also involves efforts to stimulate children's growth and development from an early age (Strobel, 2021).

Observational learning related to child development and stimulation plays a role in improving positive parenting practices, allowing children to achieve optimal physical and psychological development. Changes in healthy behavior in mothers are seen from daily parenting practices, such as providing various play equipment, playing actively with children more often or longer, teaching good behavior, providing affection and warmth, creating a safe and comfortable environment, involving children in quality communication through activities such as reading, singing, and storytelling, and showing good attitudes in interacting (Andrew et al., 2020; Sylvia et al., 2021).

The results of this study indicate that the use of stimulation videos has a positive impact on achieving children's developmental milestones. This finding is in line withresearch conducted byHerawati (2021)namely video-guided stimulation increases the development of babies aged 6-12 months higher than independent stimulation based on books (handbooks). Therefore, videos can be an effective tool in supporting child development, especially in the context of fun learning. The improvements that occur include motor, language, social and cognitive development.

Olhaberry et al., (2019) in his research also found that video is an effective intervention media by providing significant positive feedback. Its use supports holistic child development, improves mental health, and strengthens interactions between parents and children. Video also accelerates the achievement of children's developmental milestones through an interactive and engaging approach to learning and parenting. In addition to improving concentration, motivation, and interest in learning in early childhood, video prepares them for formal education by strengthening practical skills and supporting brain development. This approach also supports various stimulation methods, such as collaborative and interaction-based learning, creating an effective and enjoyable learning experience overall.

Video feedback allows parents to understand their child's development in more depth and encourages new, more positive interactions. This approach provides parents with new perspectives on their child's growth, skills, and behavior. Video feedback also plays a significant role in improving parents' observation skills, empathy, and sensitivity to their child's needs. In addition, this method reinforces positive parenting behaviors captured in the video, thus supporting more responsive and effective parenting (Beebe, 2014).

With the support of technology, through feedback on the use of stimulus videos, parents can develop a reflective attitude that helps them understand their child's development more deeply. Better understanding allows parents to provide more appropriate stimulation to accelerate child development. There is research that states that maternal knowledge can be influenced by several things, namely information obtained by the mother, level of knowledge, education and closeness between the child and the mother (Pratiwi & Irdawati, 2017).

This approach not only harnesses the potential of parents and children, but also strengthens their abilities with a positive perspective. Video feedback provides an opportunity for parents to reflect on their actions, support their child's development, and enrich their own development. Over time, this process creates a mutually supportive environment, where the development of children and parents occurs together and is mutually beneficial (Olhaberry et al., 2019).

This is because the role and knowledge of parents are very important in the development of early childhood, because they are the main foundation for children to learn and develop. The family environment is the first place where children begin to learn, and their behavior and development often imitate the examples given by their parents. Therefore, parents have a great responsibility in educating children and must be role models so that children's development can run optimally (Rahmadianti, 2020).

CONCLUSION

This study shows that education through video stimulation development has a positive effect on increasing the developmental milestones of early childhood. The results of data analysis showed a significant increase between the pre-test and post-test questionnaire scores with a significance value of p

= 0.002 after the respondent parents watched educational videos and trained their children's stimulation for two weeks. Thus, the use of video media as an educational tool can be an effective method to increase parental knowledge about child development stimulation. Parents can gain a better understanding of their children's developmental needs by utilizing video stimulation interventions to provide appropriate stimulation according to the child's age. With an effective and easily accessible educational method for parents, this study contributes to technology-based development to support children's growth and development as a whole. Parents are advised to be directly involved in training their children's developmental stimulation. By using video-based media, developmental stimulation can be provided gradually and consistently according to the child's age.

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AUTHOR CONTRIBUTION

Nurul Istiqomah (NI), Anggi Luckita Sari (ALS), Estin Yuliastuti (EY), Syahria Ulayya Asjad (SUA), Wulan Saputri Rasyid (WSR).

NI contributes to the collection, processing, and presentation of data. ALS contributes in the preparation of articles. EY: preparation of research video stimulation. SUA: processing, and presentation of data. WSR: Preparation of research video stimulation. All the authors involved in revision and approved the final version of the manuscript

ETHICAL APPROVAL AND CONSENT

Ethical approval was obtained from the Ethics Committee of the ITS PKU Muhammadiyah Surakarta with the number 462/LPPM/ITS.PKU/IX/2024. Informed consent was obtained from all individual participants included in the study.

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CONFLICT OF INTEREST

The authors hereby declare that there’s no conflict of interest in this study, either to any institutions or individuals

DATA AVAILIBILITY STATEMENT

The data that support the findings of this study are not publicly available due to privacy or ethical restrictions. However, they are available from the corresponding author on reasonable request and with permission from ITS PKU Muhammadiyah Surakarta.

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